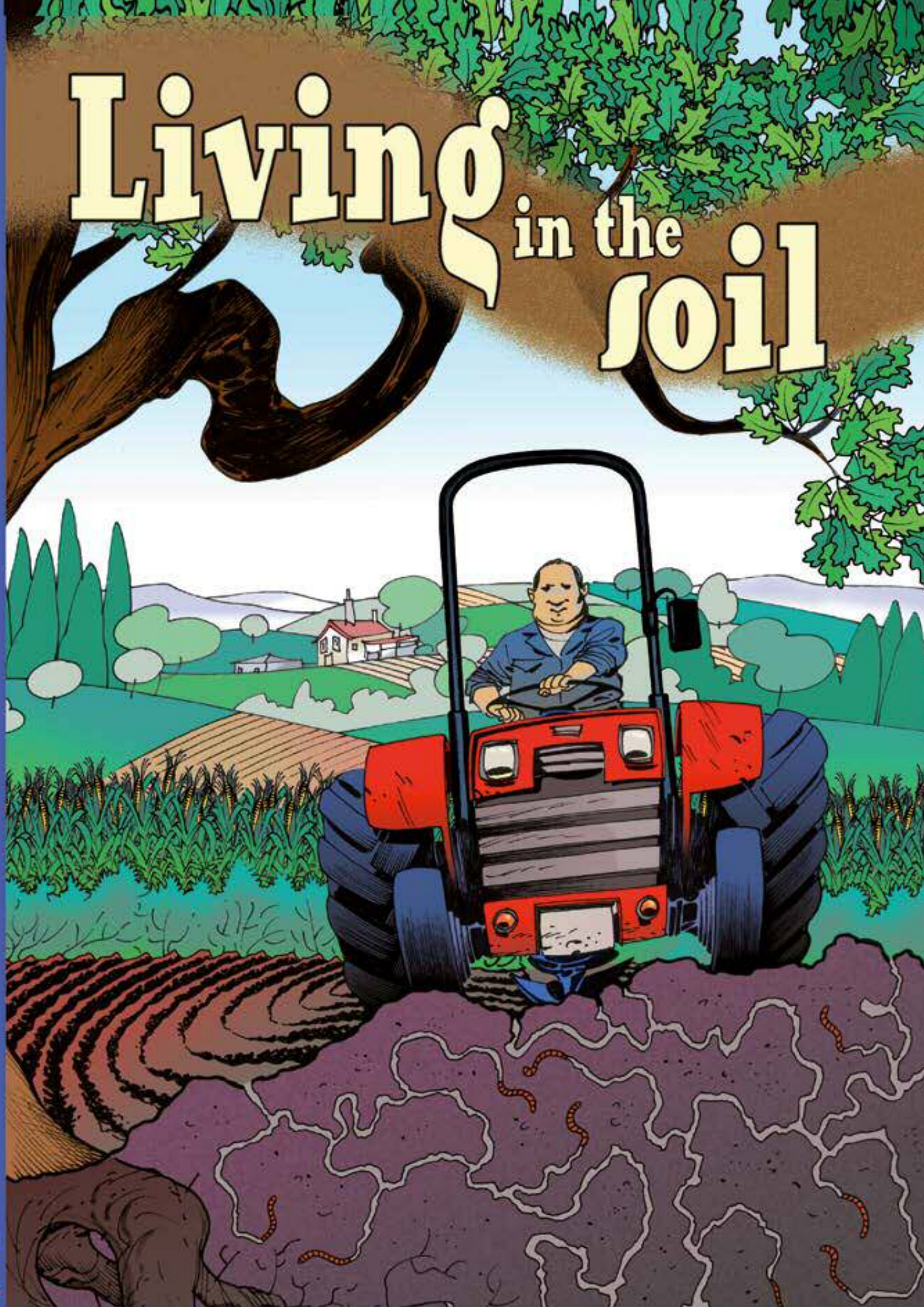


Living in the soil

2015 INTERNATIONAL YEAR OF SOILS



Script: M^a. Pilar Jiménez Aleixandre

Illustration: Estudio Tangaraño

Documentation and scientific advice: M. T. Barral Silva and F. Díaz-Fierros V.

Living in the soil

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ESTUDIO TANGARAÑO

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The publication of this comic to commemorate the International Year of Soils has been made possible by the Spanish Society of Soil Science (SECS-Territorial Delegation of Galicia) and the University of Santiago de Compostela.

The Galician Culture Council published, in the Galician language, the comic *Vivir no solo* with the aim of raising awareness amongst young people the importance of soil and the need to protect it.

Recently, it has promoted the adaptation and re-edition of this comic in Spanish for broadcasting nationally. This book is an English translation and adaptation of the Spanish edition of the comic *Vivir en el suelo*.

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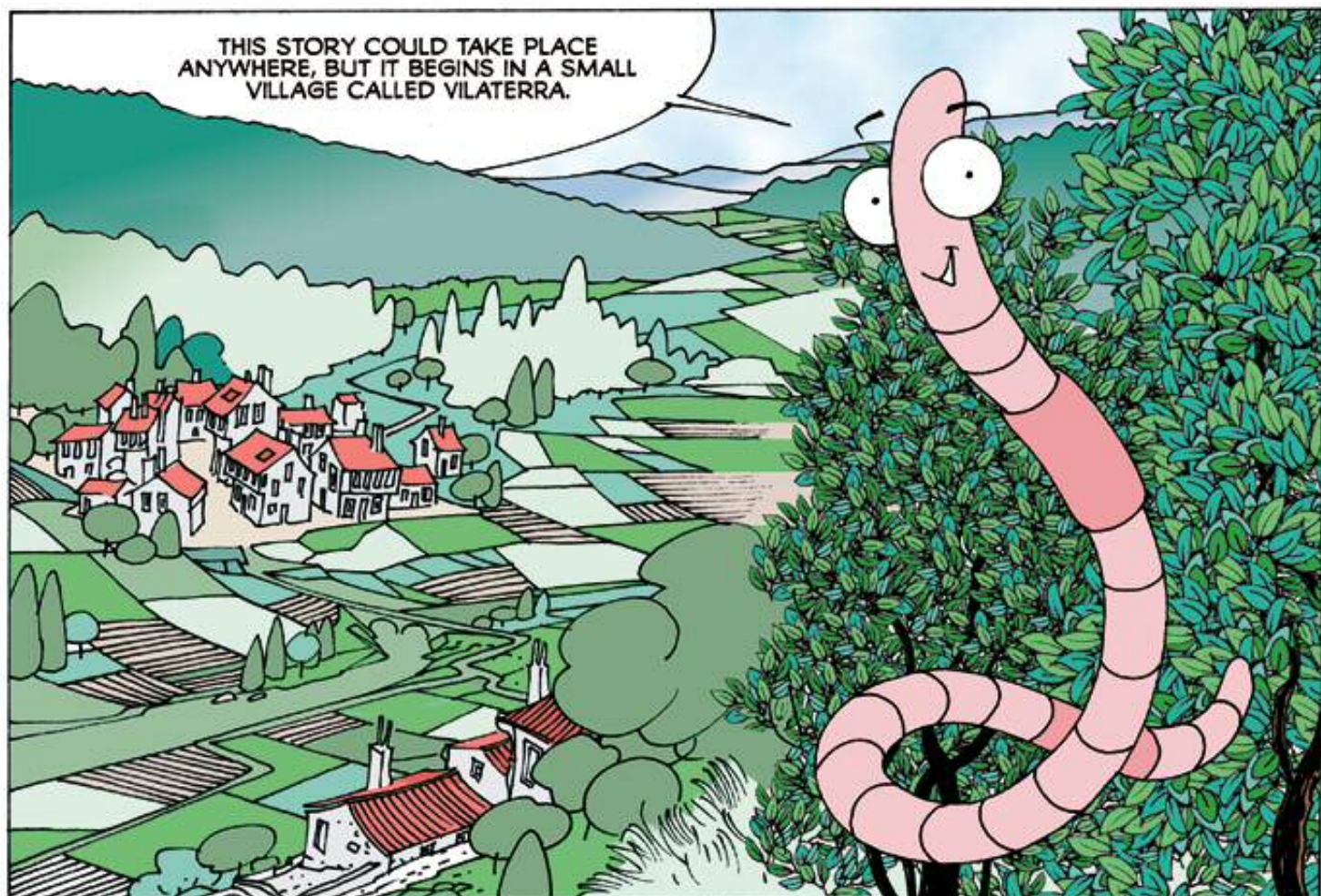
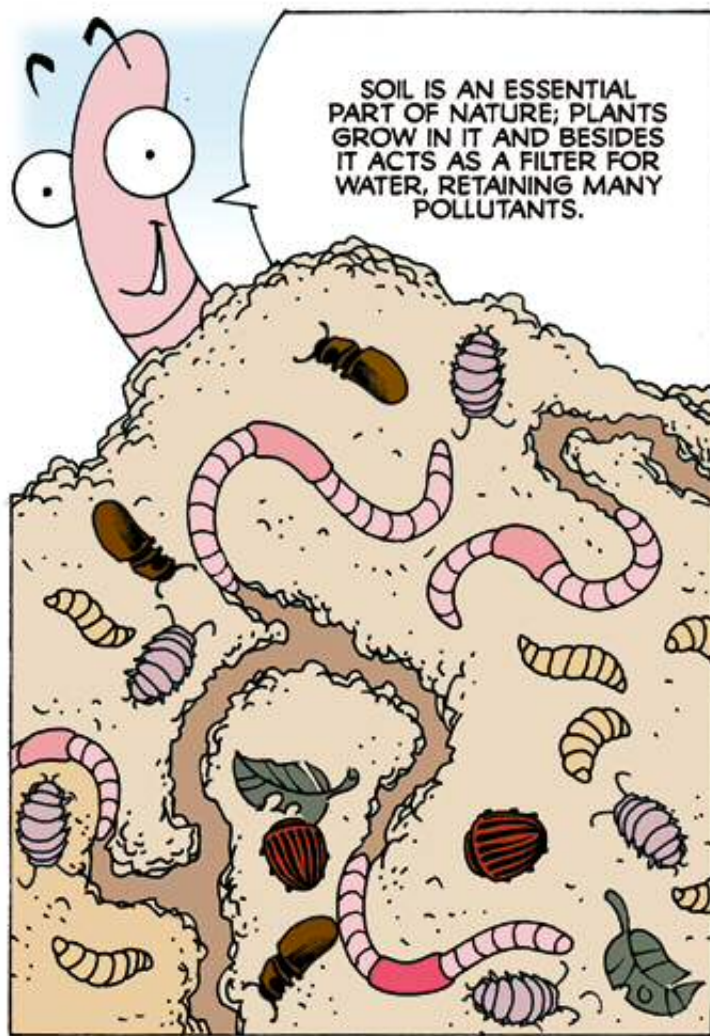
English translation and adaptation: M.T. Barral, M. Díaz-Raviña and F. Díaz-Fierros

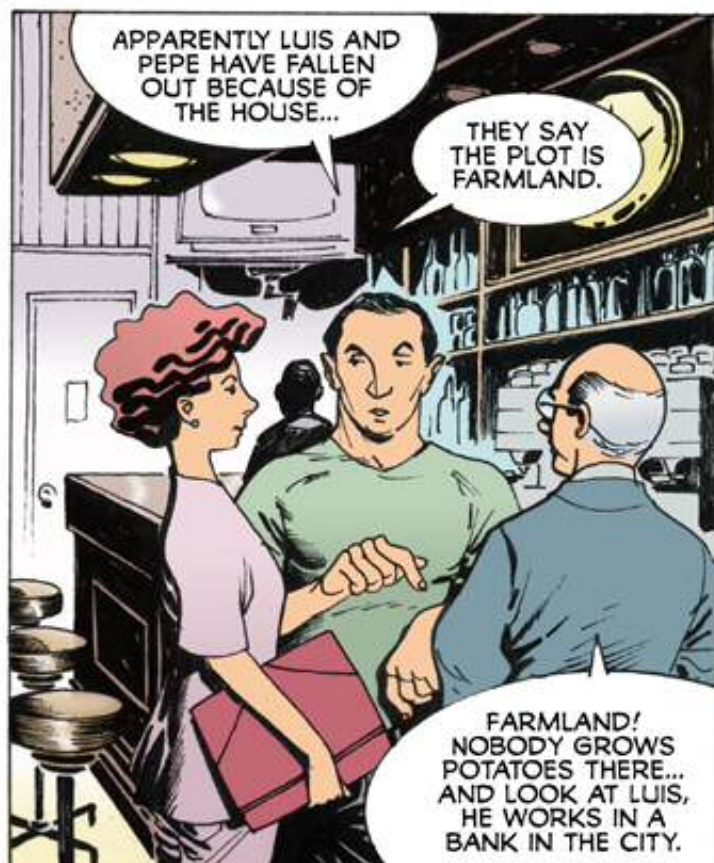
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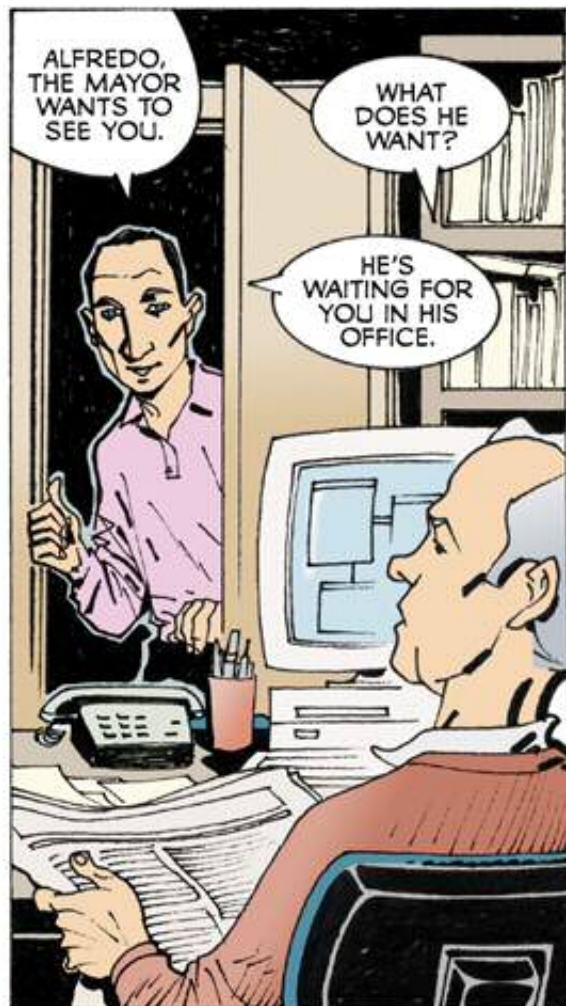
Imprime: Tórculo Comunicación Gráfica, S.A.

ISBN: 978-84-8408-870-7











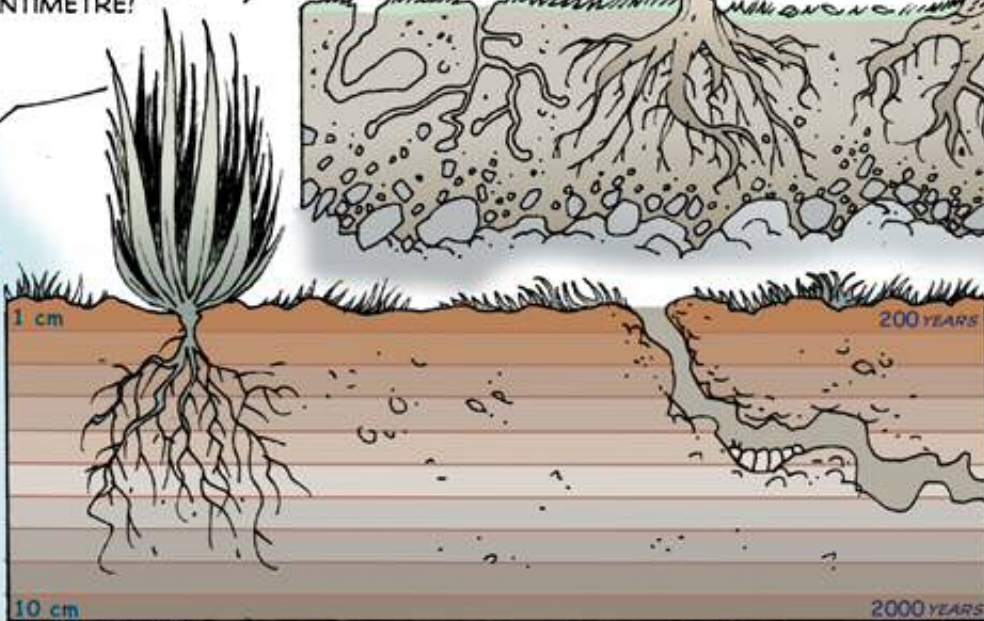
WELL YES, LOTS OF PEOPLE THINK IT'S NECESSARY TO SAVE WHALES OR OAKS, BUT THEY WOULDN'T LIFT A FINGER FOR SOIL, AFTER ALL, IT DOESN'T CRY!

BUT WHAT HAS SOIL GOT TO DO WITH THE ENVIRONMENT OR ECOLOGY?

SOIL IS A NATURAL RESOURCE, IT'S THE BASIS OF LIFE ON EARTH; IT'S NECESSARY FOR THE EXISTENCE OF PLANTS, ANIMALS, HUMAN BEINGS...

I THOUGHT THAT RESOURCES ARE SCARCE AND VALUABLE. BUT THERE'S A LOT OF SOIL, YOU'RE NOT TRYING TO TELL ME THAT IT'S ACTUALLY VALUABLE!

OF COURSE IT'S VALUABLE, BECAUSE GOOD SOIL THAT CAN BE USED FOR FARMING IS SCARCE. AND DO YOU KNOW HOW LONG IT TAKES TO FORM SOIL? MORE THAN 200 YEARS PER CENTIMETRE!



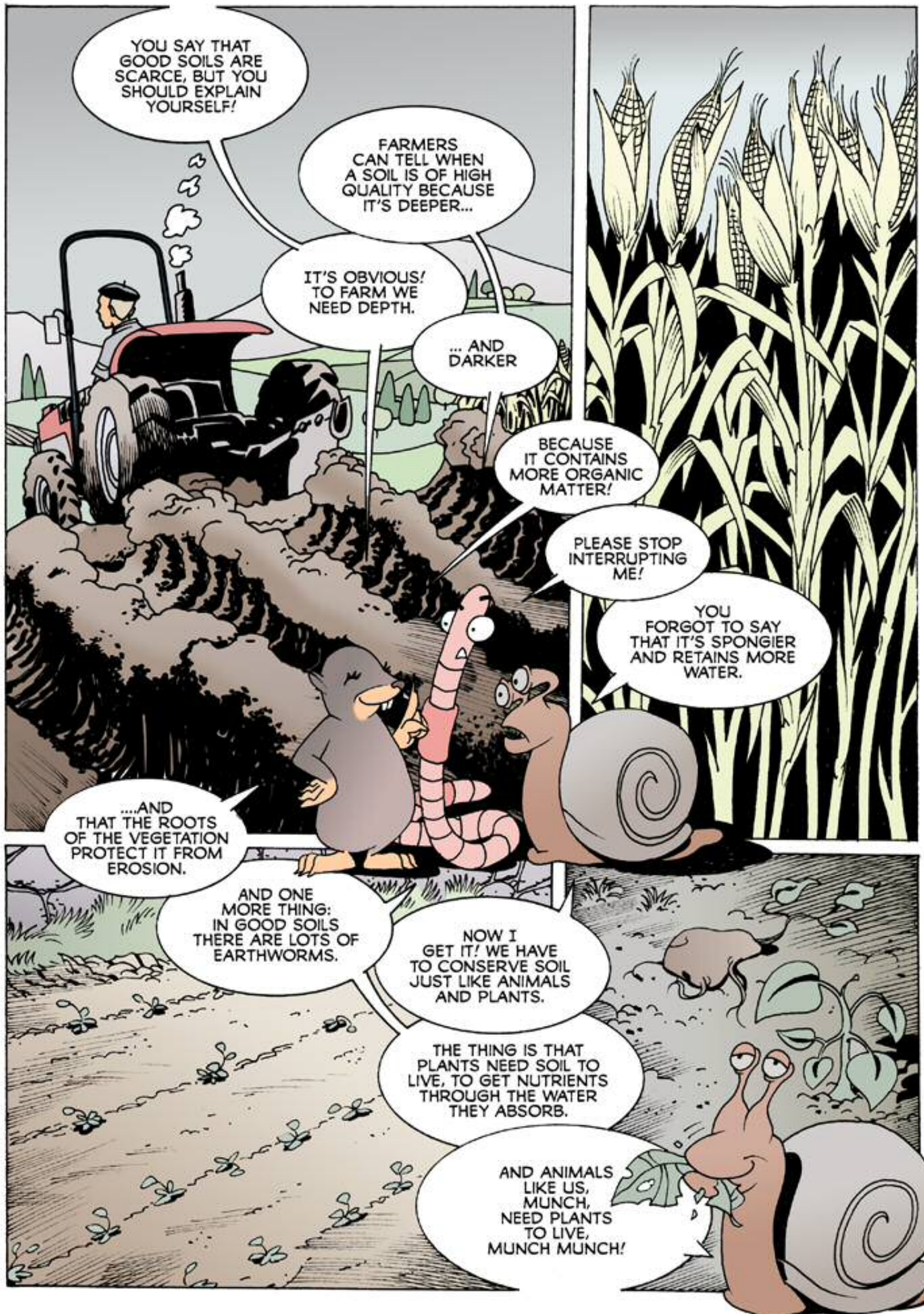
SO LONG?

SOILS ARE FORMED WHEN ROCKS ARE FRAGMENTED AND WEATHERED MAINLY BECAUSE OF THE WATER ACTION. PLANTS START GROWING BETWEEN THE LOOSE PIECES AND WHEN THEY DIE, THEIR REMAINS BECOME HUMUS, WHICH IS DARK AND SPONGY.

AND WHERE DO ANIMALS FIT INTO ALL THIS?

ALL LIVING BEINGS THAT LIVE IN THE SOIL CONTRIBUTE TO ITS FORMATION, BORING, BREAKING, LEAVING BEHIND EXCREMENT... SPECIALLY EARTHWORMS!





YOU SAY THAT
GOOD SOILS ARE
SCARCE, BUT YOU
SHOULD EXPLAIN
YOURSELF!

FARMERS
CAN TELL WHEN
A SOIL IS OF HIGH
QUALITY BECAUSE
IT'S DEEPER...

IT'S OBVIOUS!
TO FARM WE
NEED DEPTH.

... AND
DARKER

BECAUSE
IT CONTAINS
MORE ORGANIC
MATTER!

PLEASE STOP
INTERRUPTING
ME!

YOU
FORGOT TO SAY
THAT IT'S SPONGIER
AND RETAINS MORE
WATER.

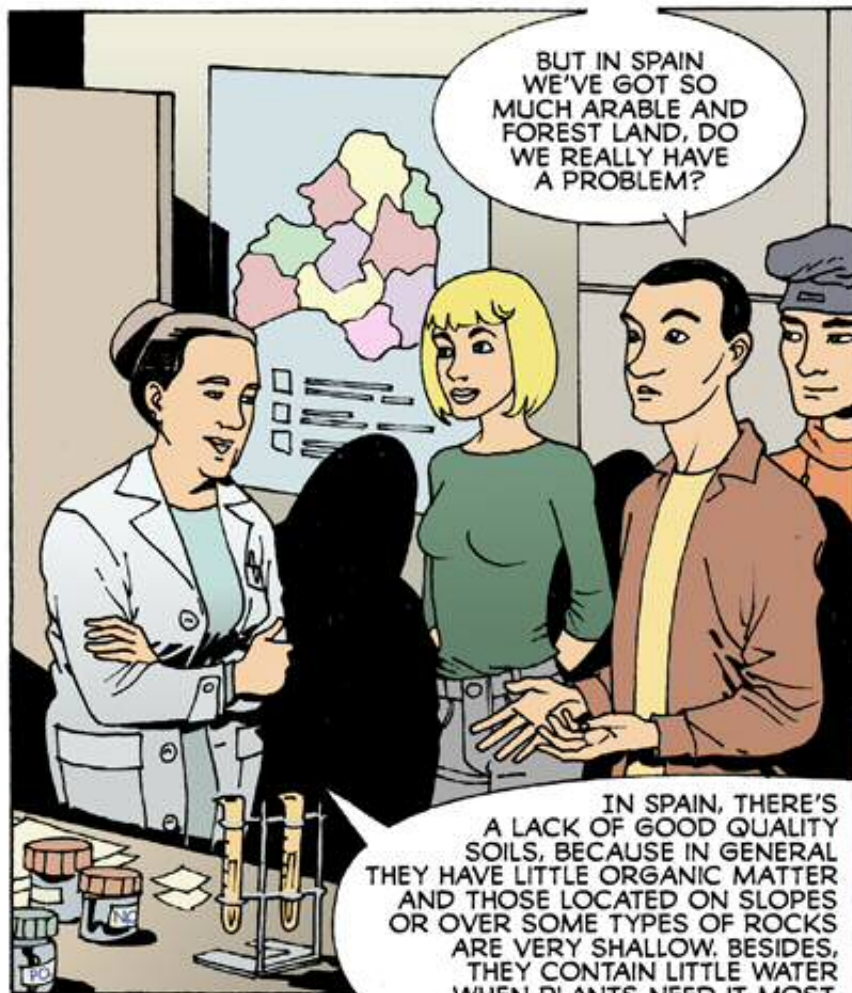
....AND
THAT THE ROOTS
OF THE VEGETATION
PROTECT IT FROM
EROSION.

AND ONE
MORE THING:
IN GOOD SOILS
THERE ARE LOTS OF
EARTHWORMS.

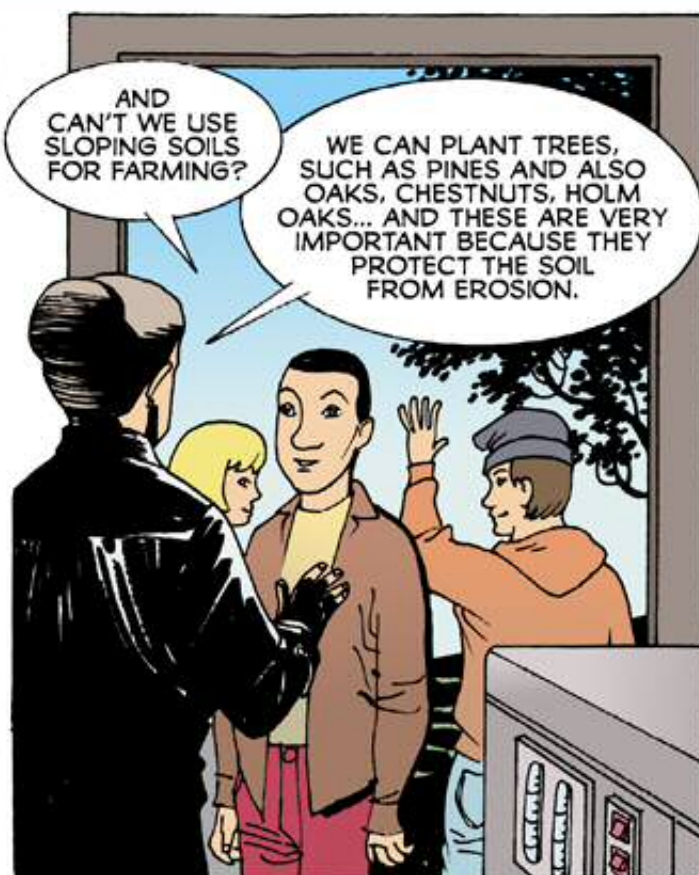
NOW I
GET IT! WE HAVE
TO CONSERVE SOIL
JUST LIKE ANIMALS
AND PLANTS.

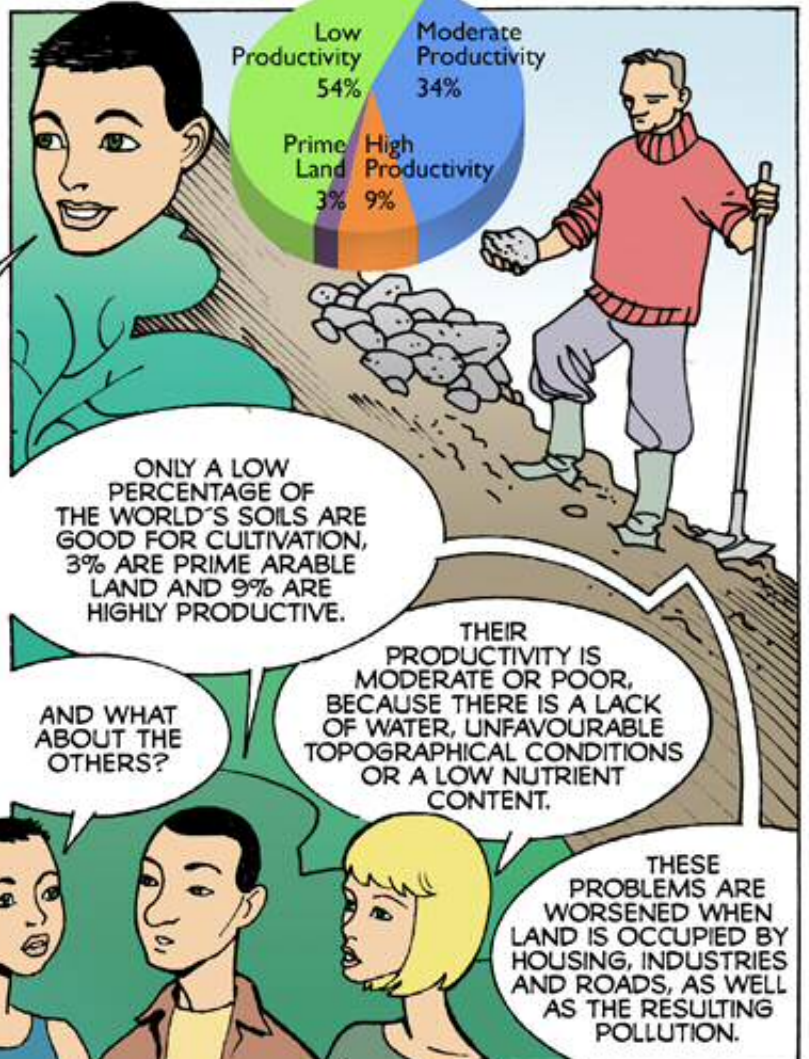
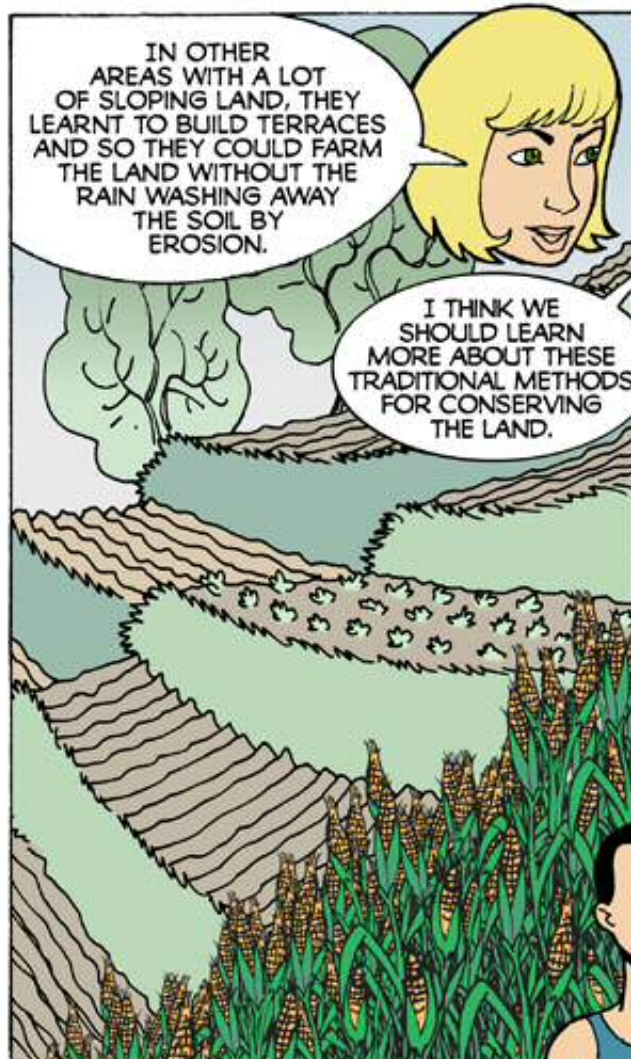
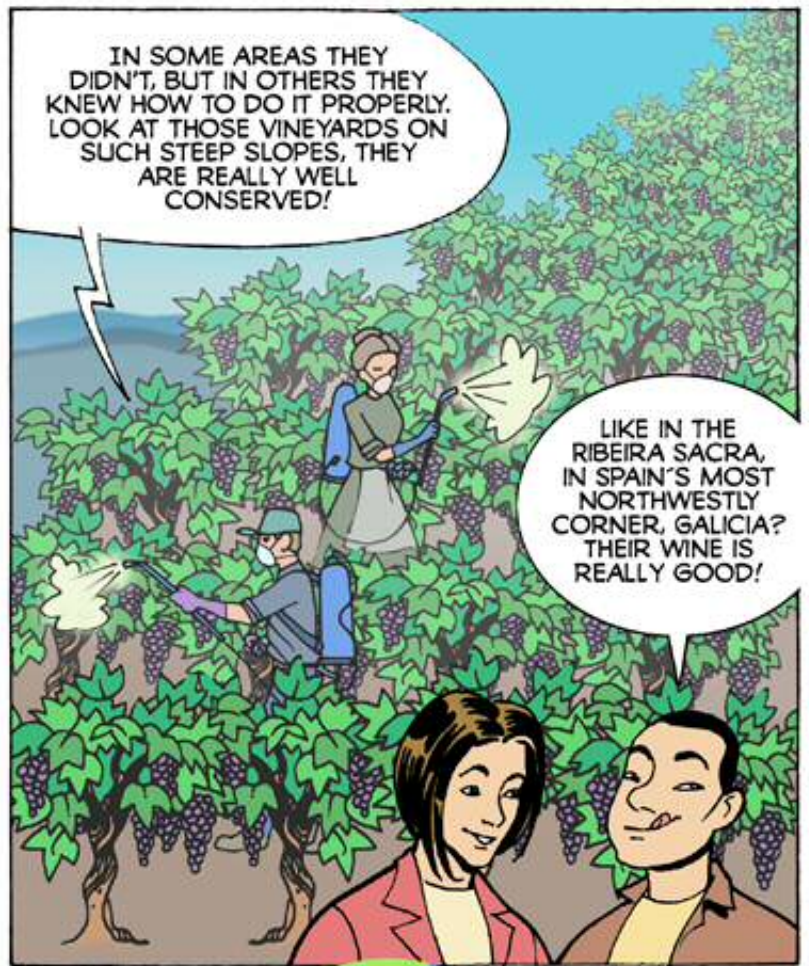
THE THING IS THAT
PLANTS NEED SOIL TO
LIVE, TO GET NUTRIENTS
THROUGH THE WATER
THEY ABSORB.

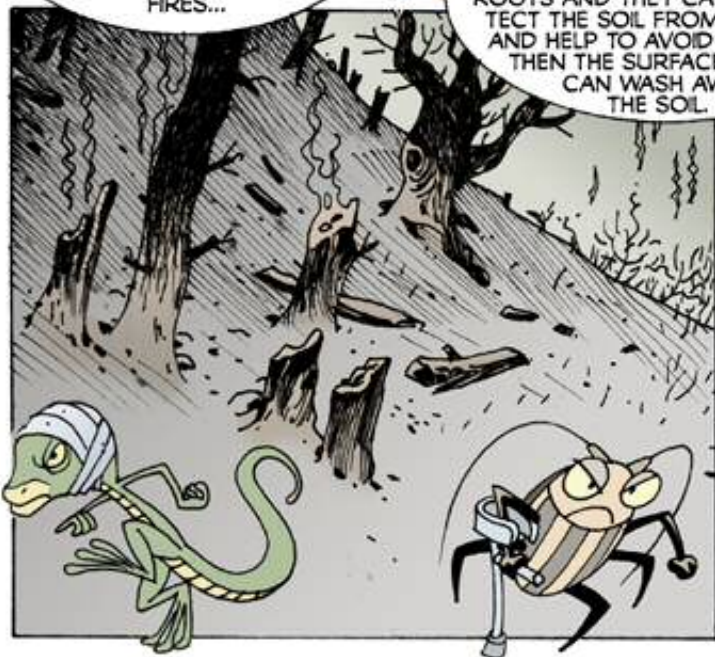
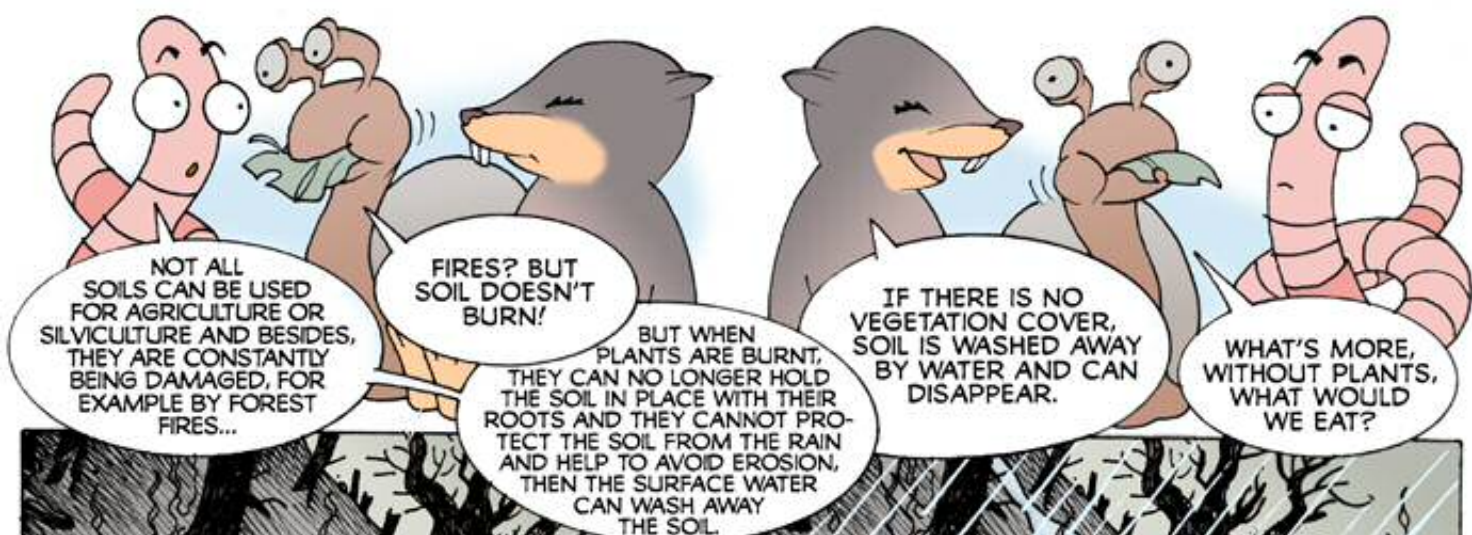
AND ANIMALS
LIKE US,
MUNCH,
NEED PLANTS
TO LIVE,
MUNCH MUNCH!



IN THE NORTH AND NORTHWEST OF SPAIN, NORMALLY IT DOES. BUT IN THE REST OF THE COUNTRY, WITH A MEDITERRANEAN CLIMATE, RAINFALL IS SCARCE IN SPRING AND SUMMER. THAT'S WHY THEY NEED IRRIGATION.







EROSION
ISN'T THE ONLY
THING THAT CAN
DESTROY THE
SOIL.

IT ALSO
DISAPPEARS
UNDER BUILDINGS,
ROADS...

BUT
PEOPLE NEED
HOUSES AND
ROADS TO LIVE,
DON'T THEY?

YES, BUT TOWN
PLANNING CAN
BE ORGANIZED TO
PRODUCE AS LITTLE
DAMAGE AS
POSSIBLE.

NOW,
FOR EXAMPLE, IT'S
COMPULSORY TO REMOVE
THE TOPSOIL LAYER BEFORE
ANY CONSTRUCTION WORK
AND REUSE IT LATER
IN PARKS AND
GARDENS.

SO THE
SOIL IS NOT BURIED
UNDERNEATH THE CEMENT!

THE FERTILIZATION
OF FARMLAND ALSO
HAS TO BE
MANAGED.

WE MUST AVOID THE
EXCESSIVE USE OF FERTILIZERS;
MANURE OR ANIMAL SLURRY MUST
BE USED AT LEAST 35 TO 50 METRES
AWAY FROM ANY SPRINGS OR WELLS.
IF THERE IS A RIVER OR STREAM
NEARBY, WE HAVE TO KEEP 10
METRES AWAY FROM ITS BANK.

WE WANT
CLEAN
WATER!

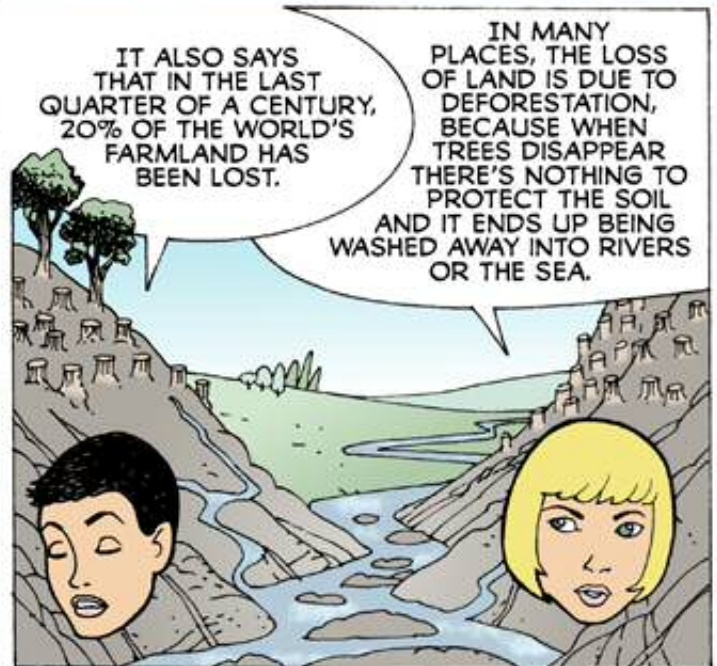
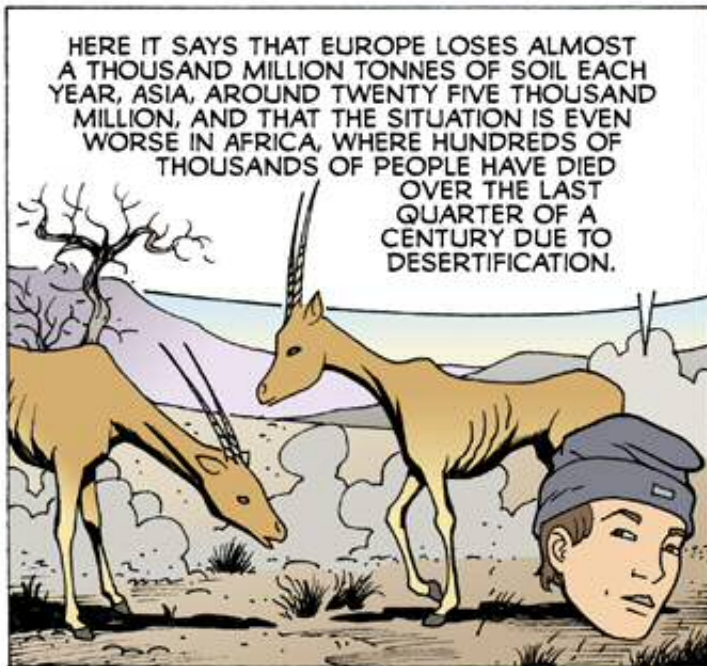
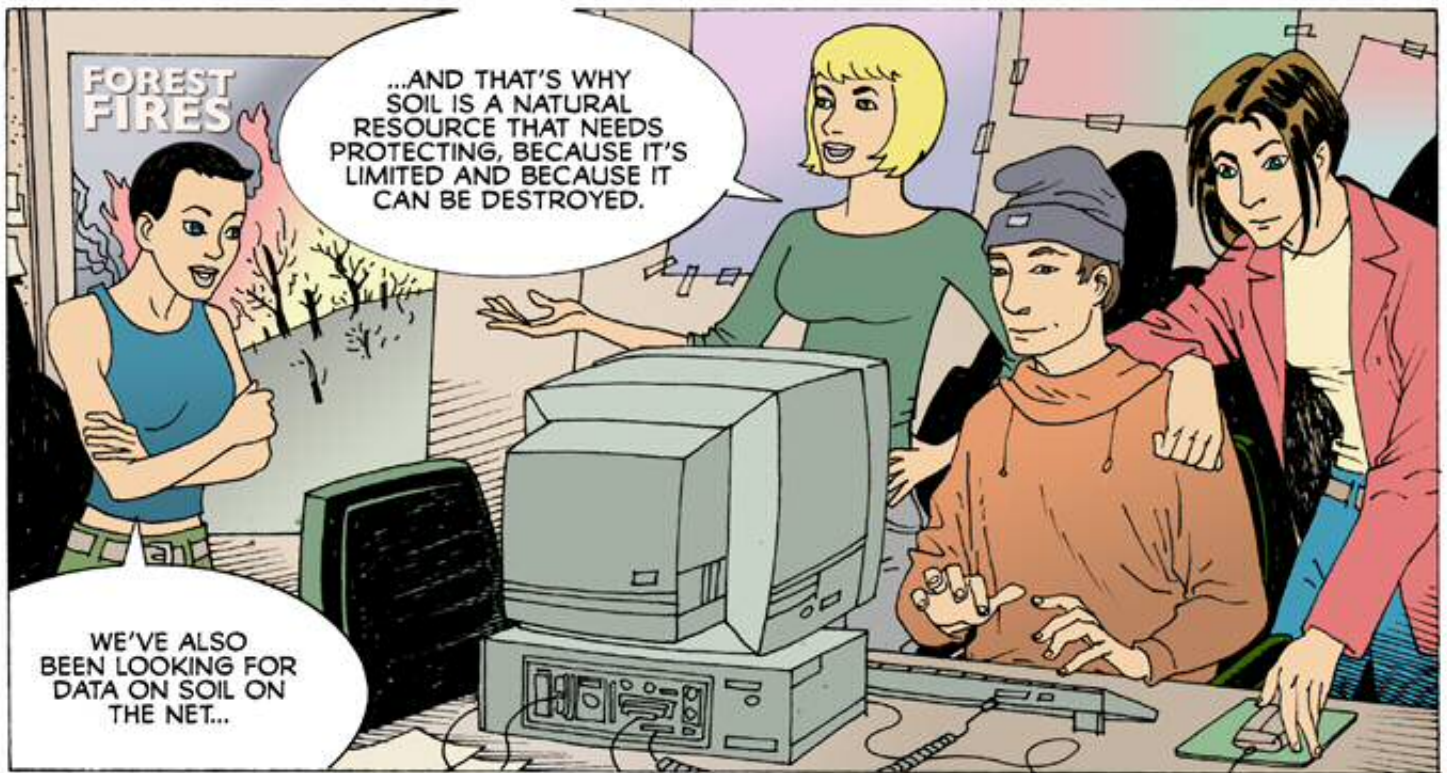
WE HAVE
TO AVOID THE USE
OF INSECTICIDES OR
HERBICIDES UNLESS
IT'S ABSOLUTELY
NECESSARY.

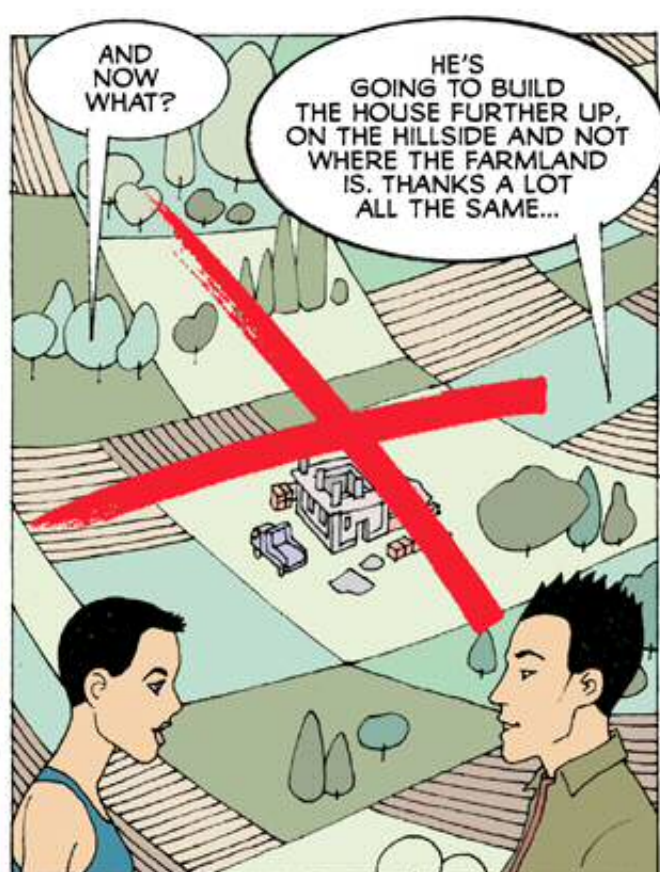
THEY KILL
WHAT THEY'RE
SUPPOSED TO, AND
EVERYTHING ELSE,
AND THEY TASTE
DISGUSTING!
UGH!

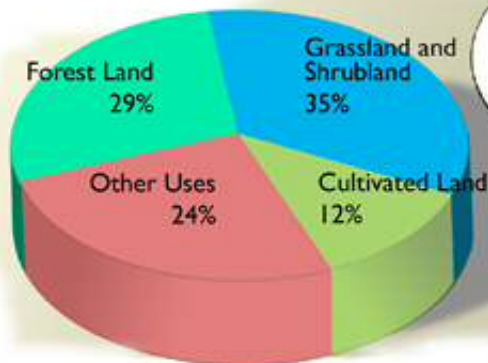
FROM INSECTS
THEY CAN PASS ON TO
BIRDS AND OTHER ANIMALS
AND PUT THEM IN DANGER,
IT'S BETTER TO USE
BIOLOGICAL CONTROL
METHODS.

ABOVE ALL,
WE CANNOT RUIN
THE SOIL WITH
UNCONTROLLED
RUBBISH DUMPS.

AND WE MUST PLAN WASTE LANDFILLS
SO THAT TOXIC PRODUCTS DON'T FILTER
THROUGH AND POLLUTE THE SOIL AND WATER.







IN THE WORLD FARMLAND IS SCARCE. ONLY HALF OF IT CAN BE USED FOR AGRICULTURE. AND CROPS ARE THE BASIS OF FOOD PRODUCTION.

BUT THERE'S STILL A LOT OF SOIL IN THE WORLD THAT ISN'T BEING PUT TO GOOD USE, ISN'T THERE?

NOT AT ALL! 87% OF THE AVAILABLE SOIL IS ALREADY BEING CULTIVATED AND IT'S HARDER AND HARDER TO FIND SOIL THAT IS APPROPRIATE FOR FARMING.

THAT'S WHY IT'S SO IMPORTANT TO CONSERVE THE GOOD QUALITY OF THE SOIL WE DO HAVE.

THE FOREST FLOOR SHOULD BE KEPT CLEAN TO AVOID FIRES AND WHEN THE UNDERGROWTH IS CUT, IT'S BETTER TO SHRED IT AND LEAVE THE FOREST REMAINS ON THE GROUND, NOT BURN THEM.

REFORESTATION SHOULD BE DONE CAREFULLY SO AS NOT TO DAMAGE THE SOIL.

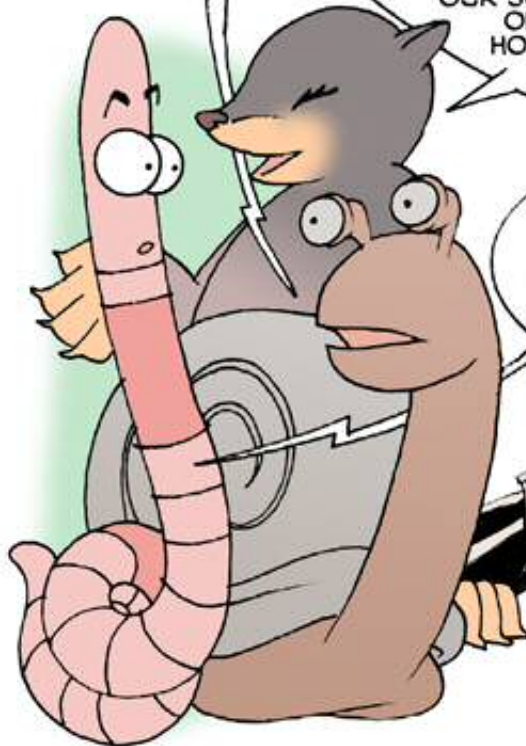
THIS MAKES A BETTER USE OF NUTRIENTS.

TREES THAT GROW QUICKLY, LIKE PINE AND EUCALYPTUS TREES, SHOULDN'T BE PLANTED TOO CLOSE TOGETHER OR CUT DOWN AT THE SAME TIME.

ONE OF THE BEST THINGS WE CAN DO FOR OUR SOILS IS TO MAINTAIN THE COVER LAYER OF VEGETATION, BECAUSE THE ROOTS HOLD TOGETHER THE SOIL AND BESIDES, GRASS AND PLANTS PROTECT IT FROM BEING WASHED AWAY BY WATER.

MAINTAINING VEGETATION IS IMPORTANT EVERYWHERE, ESPECIALLY WHERE RIVERS RISE.

ON THE OTHER HAND, WITHOUT VEGETATION, THE SOIL RUNS THE RISK OF BEING WASHED AWAY BY EROSION.





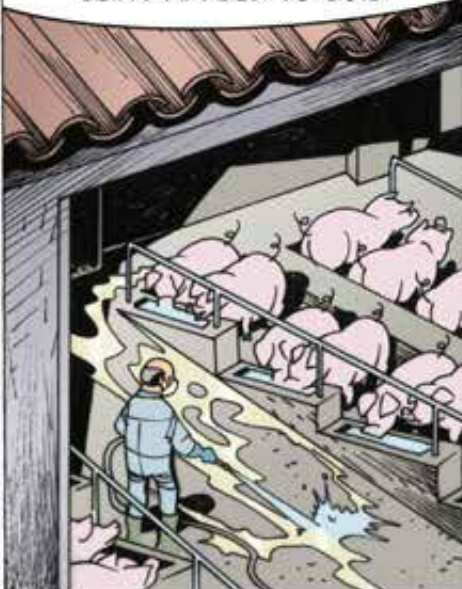
WE MUST BE CAREFUL WITH MANURE AND ANIMAL SLURRY: ALTHOUGH THEY CAN BE USEFUL AS FERTILIZERS, USED IN EXCESS, THEY CAN POLLUTE THE SOIL AND WATER.

THAT'S WHY IT'S IMPORTANT TO PROPERLY MANAGE MANURE AND SLURRIES USED ON CATTLE FARMS AND TO PREVENT POLLUTION CAUSED BY DISCHARGES ON SOIL OR INTO WATER. THEY MUST BE STORED AND TREATED BEFORE BEING APPLIED TO SOIL.

URBAN AND INDUSTRIAL WASTE SHOULD BE MANAGED APPROPRIATELY.

CHANGE YOUR CAR OR TRACTOR ENGINE OIL AT A GARAGE, WHERE THEY RECYCLE THE OIL, AND NOT IN THE MIDDLE OF THE COUNTRYSIDE! THE LITTLE MONEY YOU SAVE COSTS DEARLY TO THE ENVIRONMENT.

SOIL ISN'T AN ENORMOUS RUBBISH DUMP. IF WE RECYCLE MORE AND PRODUCE LESS WASTE, WE WON'T NEED SO MUCH LAND TO STORE OUR RUBBISH. SOIL IS A NON-RENOVABLE RESOURCE AND NEEDS PROTECTING! COLLABORATE!





Soil is one of humanity's most precious assets.

It allows plants, animals and man to live on the Earth's surface.

Soil is a limited resource which is easily destroyed.

The use of the soil should consider the needs of today's and tomorrow's society.

Soil must be protected against erosion and pollution.

(from the "European Soil Charter, 1972, Council of Europe")

